NOTE XXVII.

CARCINOLOGICAL STUDIES IN THE LEYDEN MUSEUM.

BY

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N°. 1.

Telphusa africana Alph. Milne Edwards.

Telphusa africana, Alph. Milne Edwards, Nouv. Arch. du Muséum, T. V, pag. 186, pl. XI, fig. 2 and 2^{a}.

The Museum has lately received a fine series of nine specimens of various ages of this species which was shortly described by Mr. Alph. Milne Edwards after a very young individual, so that I am enabled to give a more complete description of this form. As regards its external appearance, this species very much resembles the Indian *Paratelphusa tridentata* Milne Edwards, so that one is almost inclined to refer it to the genus *Paratelphusa.*

Carapace much broader than long, flattened, with the granular antero-lateral margins arched and armed with two equal epibranchial teeth behind the acute external orbital angle; length of the anterior epibranchial tooth a little shorter than that of the external orbital angle. Upper surface of the carapace punctate; cervical groove rather deep, some oblique rugose lines near the antero-lateral and postero-lateral margins of the carapace. Post-frontal ridge very distinct, straight, interrupted in the middle, but running uninterruptedly down to quite near the posterior epibranchial teeth, where it ends abruptly, there being still a small rugosity between these teeth and the ends of the ridge. That part of the carapace which lies before the post-frontal ridge is but little lower than the rest of it; front measuring nearly one third of the greatest breadth of the carapace, with the anterior margin widely but little emarginate. Orbits nearly twice as broad as high, with the upper margin sinuous and the under margin a little arcuate; internal surface of the orbits at the external side a little hairy. Terminal joint of the male abdomen triangular, a little shorter than broad (at its base); penultimate joint quadrangular, a little broader than long; antepenultimate joint nearly thrice as broad as long. Female abdomen very large and broad, its base more than twice as broad as it is long, with the tip rounded; penultimate joint nearly thrice as broad as long, with the lateral margins scarcely arcuate; the abdomina ot both sexes furnished with scattered punctulations, like also the sternum of the male; anterior part of the female sternum hairy, as far as covered by the terminal joint of the abdomen.

Chelipedes subequal; upper margin of the meropodites acute with many transverse rugosities, external surface rather convex and smooth, inner surface concave. Upper surface of the carpopodite punctate, smooth, with a strong spine at its internal angle; external surface of the hands smooth, upper margin rounded, obsoletely granular; under margin a little granular at its base. External surface of the immobile finger with a few longitudinal lines of fine punctulations, upper surface of the mobile finger rounded, minutely granulated and provided with five longitudinal series of punctulations: the two fingers lying close to each other, the tips crossing each other; internal margins armed with many rather small teeth, three or four being a little larger than the others. Acute upper margins of the strongly compressed meropodites of the ambulatory legs a little granulated, without teeth or spines; external surface smooth, that of the posterior legs punctate; under margin of the propodite spinulose, dactylopodites slender and compressed with four ridges of acute spines.

Breadth of carapace of our largest specimen (a female) 59 mm.
Length » » » » » » 41 mm.
Breadth of anterior frontal margin of this specimen 18 mm.

Our specimens were collected by Messrs. Büttikofer and Sala in the rivers of Liberia, West Africa.

Leucosia neocaledonica Alph. M. Edw., *Leucosia longifrons* de Haan, *Leucosia pulcherrima* Miers.

As has lately been remarked by Mr. K. Martin (Die Tertiärschichten auf Java, Leiden, 1880, pag. 128) and as I can confirm, *Leucosia neocaledonica* Alph. M. Edw. (Nouv. Arch. Mus. Hist. Nat. t. X, pag. 40, pl. II, fig. 1) without any doubt is identical with *Leuc. longifrons* de Haan. The form and granulation of the thoracic sinus is quite the same in both species, as are also the form and granulation of the anterior legs. The typical specimens of *longifrons* are also similarly coloured as has been described by the French naturalist. I regard *Leuc. pulcherrima* Miers (Trans. Linn. Soc. II Serie, Vol. I. pag. 236, pl. XXXVIII, fig. 4—6) too as a variety of these species, for it is only distinguished by different colouration of the carapace. I have found a dry specimen of *Leucosia* in our collection, from New-Caledonia, the carapace of which is similarly marked as in *Leuc. pulcherrima*, though the trilobate patterns on the anterior half of the carapace are not confluent in the middle line: in its principal characteristics however this specimen entirely agrees with a typical specimen of *Leuc. neocaledonica*, presented to our Museum by Mr. Alph. Milne Edwards. But I cannot find any marked difference between *Leuc. longifrons* de Haan and *Leuc. urania* Herbst, so that I believe the three above-mentioned species to be all identical with the species of Herbst, figured Tab. LIII, fig. 3

of his great work: for De Haan (Fauna Jap. pag. 133) describes no other differences than a supposed different size, the white-coloured frontal spot and the inner margins of the fingers being toothed over their whole length, but I regard these differences as of no importance. In most of our specimens of *longifrons* the front is of a paler colour than the rest of the carapace.

3. *Leucosia perlata* de Haan.

Leucosia perlata de Haan, Fauna Jap. pag. 134. *Leucosia pallida*. Bell, Monograph on the Leucosiidae, Trans. Linn. Soc. Vol. XXI, pag. 285, tab. XXX, fig. 2. *Leucosia obscura*. Bell, l. c. pag. 285, tab. XXX, fig. 3.

Besides two typical specimens of *Leuc. perlata* de Haan in a dry state, the collection contains:

1. A fine male specimen, lately collected by Mr. Semmelink near the island of Banda-Neira; the upper surface of the carapace and of the anterior legs are of a dark olive-colour, marbled with a somewhat lighter hue; four whitish spots on the anterior part, the two anterior lying at a greater distance from each other than the posterior; two dark spots behind. Fingers white, except at the base. A distinct row of granules on the inner margin of the hand. Tubercles of the upper surface of the arms of a yellowish red colour.
2. A female specimen from the shores of the island of Sanghir.
3. A female collected on the south-coast of Ceram.

The latter two specimens are of quite a different colour, the upper surface of the carapace and of the legs being of a pale reddish brown, also marbled with a lighter hue; for the rest wholly agreeing with the male of Banda-Neira.

Comparing our typical specimens of *Leuc. perlata* de Haan with the description and figures of *Leuc. pallida* Bell, there can be no doubt that these forms are quite identical;

Mr. Miers moreover has shown (Ann. and Mag. of Nat. Hist. for March 1880, pag. 28) *Leuc. obscura* Bell to be the same species.

Pseudophilyra hoedtii n. sp.

The genus *Pseudophilyra* Miers (Proc. Zool. Soc. 1879, p. 40) differs from the true *Leucosiae* only by the absence of the so-called thoracic sinus, a cavity in the subhepatic region of the carapace, and includes, as far as I am aware, but two species, *Pseudoph. perryi* and *Pseudoph. tridentata*. I now have found in our collection two fine specimens, collected on the shores of Amboina by Mr. Hoedt, which by the absence of the thoracic sinus must be referred to *Pseudophilyra.* Our form may be closely allied to, may perhaps be even identical with *Pseudoph. tridentata* Miers of the Corean seas, but unfortunately only the carapace of this species has been described and when the hand which was also figured by Mr. Miers as probably belonging to that carapace, having been found in the same phial (l. c. Pl. II, fig, 4a), really belongs to it, then our species is quite an other one, for the shape of the hands is quite different.

In its outer appearance both of the carapace and of the legs, our form closely resembles *Leucosia pubescens* Miers (Trans. Linn. Soc. 1877, pl. XXXVIII, fig. 22—24). Carapace (front included) more long than broad, punctulated with rather few scattered punctulations. Anterolateral margins a little sinuated in front of the base of the insertion of the chelipedes, beaded by granules, which are largest above the base of the anterior legs and diminish gradually in size towards the front. Posterior margin and postero-lateral margins defined by a beaded line, the granules of which being largest above the first pair of ambulatory legs and diminishing in size posteriorly. Space between the lateral margin of the carapace and the base of the chelipedes a little pubescent without granules. Frontal margin tridentate, middle tooth projecting a little more than the lateral. Pterygostomian regions and sternum quite smooth in both sexes. Male abdomen with all the joints except the last coalescent, its lateral margins sinuated, resembling that of *Leuc. whitmeei* Miers. (Trans. Linn. Soc. II Serie, Vol. I, Pl. XXXVIII, fig. 18). Chelipedes wholly resembling those of *Leuc. pubescens* Miers (l. c. fig. 22). Upper surface of the arm with a group of very small tubercles at the base, covered by a patch of short dense pubescence, which extends on the external half of the basal third part of the upper surface, with one or two small tubercles in front of it; two distal thirds of upper surface quite smooth; anterior and posterior margins with a line of nine or ten tubercles.

Under margin also tuberculated and provided with a patch of dense pubescence at the base; external and under surface of the arms wholly smooth. Wrist convex and smooth with a line of three small tubercles at the inner margin. Hands with the palm more long than broad with rounded external margin, quite smooth except minutely granulated near the inner margin, which passes to a punctulated line on the immobile finger. Mobile finger rather longer than the other, a little arcuated and like the index minutely dentate on the whole inner margins. Under surface of the fingers with a punctulated line. Male chelipedes quite similar to those of the female. Colour greenish grey with a series of yellowish spots near the margins of the carapace, two white spots on each side of the gastric region, followed by a sinuated white line on each side of the cardiacal region. Anterior legs with the articulation and the base of the fingers orange-coloured; ambulatory legs whitish with the distal ends of the meropodites and of the following joints also orange.

Length of carapace $14^1/_2$ mm., breadth 12 mm.

Philyra scabriuscula Fabr.

Leucosia scabriuscula, Fabr. Suppl. Ent. Syst. p. 349.

Philyra scabriuscula, Milne Edwards, Hist. Nat. Crust. T. II, pag. 132, Pl. XX, fig. 9 and 10. — Bell, Monograph of the Leucosiidae, pag. 299.

The Museum collection includes:

1° A series of 25 very beautiful specimens (6 ♂, 19 ♀), collected on the shores of Atjeh (Sumatra), lately presented by Mr. Walraven.

2° A female specimen from the island of Amboina.

The description of this species being rather incomplete, I may be allowed to give a new one:

Carapace orbicular, as long as broad (when epistome included), depressed, minutely punctate on its whole surface, with a continuous beaded line defining the lateral and posterior margins; lateral and posterior regions of the carapace (branchial, cardiacal and intestinal regions) covered with numerous small white granules, frontal and protogastrical regions entirely smooth and polished: in some Atjeh specimens the posterior parts of the protogastrical regions are also covered with a few small granules and in the female Amboina specimen the whole surface of the carapace is granulous, except the frontal region. Frontal margin emarginated, with a small median tooth and rounded lateral lobes, external orbital angles rounded. Epistome extending far beyond the front: region between the antero-lateral margins and the lateral granulated margin of the epistome also somewhat granular. First joint of the sternum, which borders posteriorly the buccal cavity, being smooth in the male with a minutely granulated anterior margin, but entirely granulated in the female; anterior external angle of the second joint, which lies between the insertion of the chelipedes, covered with small white granules. In the male the anterior margins of the other joints and the lateral margins of the cavity that includes the abdomen are also granular. In the female the whole sternum as far as visible is granular. External margins of the stalks of the outer foot-jaws granulated in both sexes; palps extraordinarily dilatated, with the external margin hairy. Lateral parts of the cephalothorax smooth, defined downwards by a beaded line, the posterior part of which being more coarsely granulated than the rest. The joints of the male abdomen are all united, except the last, though the sutures are visible: it is punctulated, as is also the sternum, the basal joint is granulated; in the same manner the basal joints and the basal part of the penultimate joint of the female abdomen are granulated. Anterior legs twice and a half as long as the carapace in the male, but only twice as long in the female. Arm slender, cylindrical, granulated, except a narrow longitudinal space on the middle of the upper surface; the under surface also nearly smooth, except at its base; the granules rather large, disposed in longitudinal series. Wrist smooth, with a few minute granules at the inner margin. Hands in the male elongated, depressed, smooth, minutely punctate; external margin of the palm granular, internal margin rounded, minutely granulated, the granules not disposed in longitudinal series (as described in Bell's diagnose); immobile finger a little shorter than the palm, mobile finger curved, longer than the other, both fingers longitudinally sulcate and minutely granular; inner margins toothed over the whole length, some large teeth alternating with smaller ones. In the female the fingers are somewhat longer than the palm, the lateral margins of the latter and the also sulcate fingers very minutely granulated. Ambulatory legs smooth, with the upper and under margins of the meropodites minutely granulated, tarsi lamelliform, the external surface with two longitudinal grooves, the internal surface carinate.

In our Atjeh specimens the upper surface of the carapace and the anterior legs are of a more or less dark cinerous gray, the hands being marbled with a lighter rose-colour; the under surface of the carapace, like the ambulatory legs, except the white tarsi, are of a pale rose-colour. The granules are all white.

Length of carapace (epistome included) of the largest male specimen 15 mm.

Breadth of carapace of the largest female specimen 15 mm.

Length of carapace (epistome included) of the largest female specimen 13 mm.

Breadth of carapace of the largest female specimen 13 mm.

Nursia plicata Herbst.

Herbst, Krabbe und Krebse, taf. LIX, fig. 2. *Nursia hardwickii* Leach, Milne Edwards, Hist. Nat. Crust. Tome II, pag. 137. *Nursia plicata*, Bell, Monograph on the Leucosiidae, pag. 307, taf. XXXIV, fig. 4. *Nursia plicata*? Miers, On the Oxystomatous Crustacea, II Serie, Vol. I, part the fifth, 1877, pag. 240, Pl. XXXVIII, fig. 28.

A single male specimen, collected near Amoy (China) is in the collection. The anterior and especially the posterior margins of the arms of the anterior legs are thin, sharp-edged and granulated. *Cancer plicatus* is described by Herbst as having the lateral margins of the arms: »sharf erhöhet und gekörnt," so that there can be no doubt, that *Nursia hardwickii* Leach, having the margins of the arms also thin and sharp-edged, is identical with the species of Herbst.

Pagurus varipes Heller.

Heller, Sitzungsber. Akad. Wiss. Berlin, Bd. XLIV, pag. 244, Taf. I, fig. 1. Taf. II, fig. 2 und 2.

As far as I am aware, this beautiful *Pagurus* was hitherto found only in the Red Sea, where it seems to occur rather frequently; we received a fine specimen from the shores of Djeddah and another from the Red Sea, presented by Mr. Kossmann, both preserved in spirits. Now Mr. Semmelink lately presented us with a very beautiful specimen (also in spirits), which was collected on the shores of the island of Banda-Neira (Molluccas), and wholly agrees with our Djeddah specimen even as regards the colouration. It inhabits the shell of a *Bulla ampulla*, which is covered on its outer surface by three Actiniae; it is an adult specimen, as I believe, and larger than that of the Djeddah shores. In consequence of this larger size the two last joints of the third pair of legs on the left side are somewhat differently shaped: the upper margin of the external surface of the penultimate joint, which is finely denticulated in the younger Djeddah specimen, is nearly entire in the individual from Banda-Neira, the teeth being worn out; the last joint or tarsus has a more elongate appearance, being comparatively less broad at its base than in the Djeddah specimen; the teeth of the upper margin of the external surface being also a little worn out. The peduncle of the external antennae in the specimen of Banda-Neira is distinctly longer than the eye-peduncles, (as should be in our species, according to the original description), but in the younger Djeddah individual the antennal peduncles have the same length as the eye-peduncles; I regard these differences as caused by difference in age. With regard to the width of the anterior margin of the carapace, the eye-peduncles in the *adult* Banda-Neira specimen are comparatively shorter than in the *younger* Red Sea individual, though having in both the same *absolute* length: it seems therefore that when our *Pagurus* has attained to the age of the Djeddah specimen the eye-peduncles do no more increase in length, though they become thicker and coarser, when it attains to the adult state. For the rest our specimens are quite similar to each other.

As regards the Japanese *Pagurus asper* de Haan (Fauna Jap. pag. 208, tab. XLIX, fig. 4), I think it to be most nearly allied to our *Pagurus varipes*, but distinguished by the outer surface of the penultimate joint of the third pair of legs on the left side being convex; and its upper and under margins not being carinated and denticulated as in *Pag. varipes*. The original specimen of *Pag. asper* F. Jap. has not been found back by me.

Pag. varipes Heller being found in the Red Sea and in the sea of the Moluccas will therefore probably occur also throughout the whole Indian Ocean.

Dimensions of the Banda-Neira specimen:
Width of anterior margin of carapace 11 mm.
Distance from anterior margin to cervical suture 13 mm.
Length of eye-peduncles (basal scales included) $8^1/_2$ mm.
Length of the larger hand 27 mm.
Length of the tarsus of the third left pair 25 mm.

Araeosternus wieneckii nov. Gen. Nov. Spec.
A new form of the Family of Loricata.

This very interesting new form which I wish to give the name of *Araeosternus* on account of its narrow sternum, belongs without any doubt to the Family of Loricata (Scyllarides, Palinurides). As regards its generic characteristics, it is nearly allied to the genus *Palinurus* Fabr. s. s. (Palinuri communes Edw.), but differs so remarkably by the structure of the cephalothorax, the shape of the front and the form of the sternum, that henceforth it must represent a new subfamily equal in value to that of the *Scyllaridae* and *Palinuridae.*

The cephalothorax has an elongate subcylindrical shape; the upper surface has an elongate rectangular form, its greatest breadth, that is found a little behind the cervical groove, being in proportion to the length as 5 : 8; the cervical groove is found a little behind the middle, the lateral portions of which run downwards and forwards towards the anterior part of the antennary sternum; branchiocardiac grooves very faintly marked; close before and parallel to the curved posterior margin of the upper surface of the cephalothorax occurs a very deep, smooth groove. — The cephalostegite or that part of the surface of the carapace which lies before the cervical groove is convex longitudinally, the omostegite nearly straight; the whole surface however very convex transversily, the lateral regions of the cephalostegite being concave. Lateral margins curved, those of the omostegite rounded, those of the cephalostegite more sharply defined anteriorly and terminating in an acute extraorbital angle. The convex median part of the cephalostegite passes anteriorly to the broad triangular, a little deflexed front, the concave lateral parts of the cephalostegite on the contrary to the acute external angles of the carapace. The front is separated from these external angles by two deep triangular notches, into which the middle-sized eyes project, and extends nearly as much forwards as do the external angles of the carapace. The carapace bears no spines as in the *Palinuri*, but the whole surface is very closely covered with numerous small transverse tufts of very short yellow hairs, a few longer hairs being scattered among them. The anterior margin of the front and the external margins of the orbital notches are a little denticulate and a small median ridge of a few sharp teeth also occurs on the anterior part of the front. The lateral surfaces of the posterior part of the carapace run vertically downwards, but the rather concave subhepatic regions run obliquely inwards and downwards: the lateral surfaces too are covered with numerous very small tufts of short hairs. The broad triangular front wholly covers the ophthalmic and antennal segments; the antennal segment is narrow and armed with two small compressed spiniform plates, converging a little towards each other.

External antennae quite shaped as in the true *Palinuri* Fabr. (s. s.), the coxocerites and basicerites being wholly coalescent with the epistoma. An antennal scale therefore is wanting too. The ischiocerite or basal joint of the peduncle is armed with a small spine at the external angle, the upper surface posteriorly concave, anteriorly convex, the under surface convex and a little rugose, the internal surface concave and smooth; the anterior margin of the upper surface provided with some yellow hairs. Merocerite or second joint also furnished with a few yellow hairs, like the carpocerite; terminal filament or procerite a little shorter than the carapace, multiarticulate and provided with long yellow verticilated hairs. Internal antennae situated a little below the external ones, shaped entirely as in *Palinurus* Fabr. (s. s.); the basal joint, that is the longest of all, extends to the middle of the carpocerite of the external antennae; the second and third joints are of equal length, together as long as the basal joint; the two terminal filaments very short, the longer internal multiarticulate, a little shorter than the length of the two terminal joints and hairy on both margins. — Epistome of a transverse rectangular form, the anterior margin widely emarginated in the middle, with a median processus, which presents a narrow small notch; the emarginated part of the margin is dentate, the remaining lateral parts minutely crenulate; external surface of the epistome with many small tufts of minute hairs. — External maxillipedes reaching to the middle of the carpocerite of the external antennae, quite shaped as in *Palinurus* Fabr. s. s., second joint (which corresponds with the basipodite of the ambulatory legs) provided with a slender exopodite, the flagellum of which reaches to the middle of the fourth joint, third joint trapezoidal, longer than broad, with the anterior margin broader than the posterior, and having the inner margin of the narrow internal surface armed with nine or ten sharp teeth, which gradually increase in size anteriorly; internal surfaces of all the joints furnished with numerous long yellow hairs. Sternum having an elongate rectangular form, constituted by five segments, the first or anterior segment being a little less broad than the second, the second, third and fourth segments being nearly equal in breadth, the fifth again very narrow, less broad than the first, with the two sides of its surface reflected a little towards each other. Ambulatory legs all monodactyle, the first pair much thicker and stronger than the others, reaching a little beyond the peduncle of the external antennae; coxopodites inserted on the anterior margin of the first sternal joint, their internal surfaces touching one another (not separated from each other as in *Palinurus* Fabr.), meropodite scarcely reaching to the anterior margin of the epistome, compressed, with the upper margin acute, the internal surface rather concave and smooth, the external surface convex and covered with numerous small tufts of minute hairs, with longer hairs on the under surface and on the upper margin, with a very small tooth at the distal end of the under margin. Carpopodite very short, with rounded upper margin and rather convex hairy outer and inner surfaces. Propodite a little longer than the preceding joint, having the external and internal surfaces convex and provided with numerous small transverse tufts of hair, the upper margin rounded, the under margin with three or four small conical spines, the distal one being rather the larger, and provided with many long yellow hairs. Dactylopodite as long as the propodite, with the upper margin rounded and smooth, terminating in a strong dark red claw, having the lateral surfaces provided with three longitudinal series of transverse tufts of yellow hairs. The other ambulatory legs gradually decrease in length, and are shaped more or less as in the true *Palinuri.* Coxopodites of the legs of the second pair inserted on the lateral margins of the first and second joint of the sternum, meropodites very much compressed, with acute upper and under margins, having the external surface flattened and the internal rather a little concave; carpopodite cylindrical, with the upper and under margins rounded, propodite nearly twice as long as the carpopodite, compressed, dactylopodite rather long, measuring two thirds of the propodite. External surfaces of all these joints provided with very small tufts of hair, and the upper and under margins with rather long yellow hairs. Legs of the third pair similar to those of the second, though a little shorter. Those of the fourth also similar to the two preceding, but having the meropodites less compressed. Coxopodites of the fifth pair separated from one another by the narrow fifth segment of the sternum, bearing a conical verge on the under surface; meropodites rather cylindrical, carpopodites comparatively longer than those of the fourth pair, having the distal end of the under margin armed with a small lamellar tooth. Like those of the second pair, the other ambulatory legs are very hairy, with longer yellow hairs on the upper and under margins of the various joints. Abdomen similar to that of *Palinurus* Fabr. s. s., a little longer than the carapace, the upper surfaces (terga) of the joints very convex, not sulcate, and (the tergal facets excepted) provided with numerous very small tufts of short hairs. Pleura of the first segment with a concave external margin and obtuse anterior and external angles. Anterior part of the pleura of the second segment (pleural facet) with rounded anterior margin, separated from the much larger posterior part by a triangular notch, external (posterior) angle acute, external margin denticulated anteriorly. Pleura of the third segment rhomboïdal with a nearly straight denticulated external margin, with the external (posterior) angle acute, and the posterior margin nearly straight. Pleura of the fourth and fifth segments nearly similar to one another, quadrangular, with rounded antero-external angle, acute postero-external angle, and a small acute tooth on the middle of the external margin. Pleura of the sixth somite triangular with rounded antero-external margin, the posterior being concave and denticulated. Telson quadrangular, a little longer than broad, the anterior third calcified and provided with numerous small tufts of short hairs as on the terga of the other segments, the remaining part membranous with numerous longitudinal series of very small tufts of short hairs. Posterior margin of the sternum of the first abdominal segment with three teeth, the median being depressed and rather strong; posterior margins of the sterna of the second and third somites with several small lateral teeth and one median which is a little stronger; those of the fourth and fifth segments also with some small acute nearly equal teeth; sternum of the sixth somite longer (in longitudinal sense) than the preceding sterna, having the median part of the posterior margin armed with three acute teeth on each side of a median notch, the lateral parts being concave and a little denticulate.

Internal surfaces of the pleura a little hairy. Exopodites of the abdominal appendages of the second, third, fourth and fifth segments foliaceous, that of the second being ovoid and pointed, those of the three remaining becoming gradually narrower, all being hairy at both margins; endopodites of the appendages of the second segment a little shorter than the exopodites, linear and hairy; those of the remaining rudimentary. Exopodites and endopodites of the sixth segment large and broad, as in *Palinurus* Fabr. (s. s.) and forming with the telson the tailfin of our crustacean; their upper surfaces covered with numerous longitudinal series of minute tufts of very short hairs, similar to those of the upper surface of the telson.

Dimensions in millimeters:

Length of carapace 82 mm.

Greatest width of it: 50 mm.

Distance of the antero-external angles of the carapace: 28 mm.

Length of abdomen 105 mm.

Length of telson 30 mm.

Length of external antennae 85 mm

Length of internal antennae 50 mm.

Length of anterior legs 110 mm.

Length of sternum 36 mm.

Breadth of middle sternal segment: 18 mm.

The only specimen, a male, was presented to Dr. Wienecke, when visiting the little Rat-Island, near Benkulen (Sumatra) by a man, who said the animal was found by him in the sea, and I allow myself to dedicate it to him who has so greatly enriched our collection of crustacea.

The family of Loricata should be divided henceforth into three subfamilies Scyllaridae, Palinuridae and Araeosternidae, the last being distinguished by the rectangular narrow sternum and the structure of the elongated subcylindrical hairy carapace, which is quite devoid of spines.

According to Dr. T. C. Winkler, the learned palaeontologist of Haarlem, to whom I sent a figure and a short description of our *Araeosternus*, there are no fossil Crustacea, that resemble this interesting form.

Leander pacificus Stimpson.

Four specimens collected on the shores of Amboina were presented to us by Mr. Schorel. Upper margin of the rostrum in two specimens armed with seven, in the two other ones with eight teeth. End of the rostrum provided in three specimens with two small teeth close to each other, immediately behind the apex, in the fourth individual only with one small tooth. Inferior margin with four teeth, in two specimens a fifth very small tooth before them, at a small distance from the apex. This species may be closely allied to *Leander serenus* Heller, but may be recognized by the strongly *serrate* inner margin of the short terminal filament of the internal antennae.

Leander semmelinkii n. sp.

A fine small species, of which the Museum contains no fewer than 56 specimens, lately collected by Mr. Semmelink on the road of Makassar, Celebes, more or less allied to *Leander longicarpus* Stimps. and *Leander modestus* Heller.

Rostrum very slender, longer than the carapace and more or less far extending beyond the end of the antennal scales, the basal half or the basal two thirds of the upper margin *straight* and armed with 8—9 very acute teeth, the distal end more or less recurvated upwards, *without teeth* and with the point acuminated; the second tooth situated above the eyes, the teeth gradually increasing in size anteriorly and directed strongly forward. Under margin scarcely emarginate at the base, armed with three (very rarely 4 or 5) very strong teeth, the middle tooth situated quite under the foremost tooth of the upper margin, the third therefore at a large distance from the point. The formules of the teeth in our 56 specimens are:

$\frac{8}{3}$,38 specimens; $\frac{9}{3}$,13 specimens; $\frac{9}{4}$,1 specimen; $\frac{9}{5}$,1 specimen; $\frac{11}{4}$,1 specimen; $\frac{7}{3}$,2 specimens.

Peduncle of the internal antennae *much shorter* than the antennal scales, reaching to the middle of the second tooth of the under margin of the rostrum. Short terminal filament of the upper antennae extending as far as the end of the rostrum, rather thin, not serrate and the two fifths basal parts of its length united with the long filament. Branchiostegal spine very small, situated quite at the margin of the carapace; carapace quite smooth. External maxillipeds reaching a little beyond the end of the peduncle of the external antennae.

Legs of the first pair reaching to the end of the antennal scales, carpus nearly twice as long as the hands, fingers nearly as long as the palm, a little hairy. Legs of the second pair extending nearly with the whole hand beyond the antennal scales, reaching as far as the end of the rostrum, stronger than those of the first pair. Carpus a little shorter than the hand, but distinctly longer than the palm; fingers straight, closely situated to one another and measuring nearly two thirds of the length of the palm. Other legs very thin, those of the fourth pair reaching to the end of the antennal scales, those of the fifth pair not reaching quite so far. End of the terminal joint armed with three small and two longer spines.

Length of the end of the rostrum to the point of the terminal joint of the abdomen 38 mm.

Leander indicus Heller?

The Museum has lately received two specimens of *Leander* of small size (length with the rostrum included scarcely 25 mm.), which I believe to be young individuals of *L. indicus* Heller (Novara-Reise, pag. 111, taf. X, fig. 7). They differ from the description: 1^0 by the dentition of the rostrum 2^0 by the relative length of the joints of the second pair of legs. The basal part of the upper margin of the rostrum which extends a good way beyond the antennal scales, in our specimens is *straight*, but the distal half slightly recurvated upwards.

Formulas of both specimens $\frac{1\,3}{9}$ and $\frac{1\,1}{8}$; in the specimen ($\frac{1\,3}{9}$), the whole upper margin is dentate, but in the other the ninth tooth is separated by a small toothless space from the two foremost, that are situated close to the apex. In both specimens the space between the two first teeth is a little larger than between the others, and the second is situated above the eyes. The carpus of the second pair of legs is but little longer than the chela and the thin straight fingers rather a little longer than the cylindrical palm. The claws of the ambulatory legs are *very thin and very long, nearly straight*, and measure nearly two fifths of the length of the tarsi.

Our specimens were collected on the road of Makassar (Celebes) by Mr. Semmelink, together with *Leander semmelinkii.*

Leander serrifer Stimpson.

The Leyden collection contains no fewer than 150 specimens of this species, collected near Amoy (China), which very well agree with Mr. Stimpson's description (Proc. Acad. Philad. 1860, pag. 41), yet present many variations as regards the shape and the number of the teeth of the rostrum. The rostrum generally rather proceeds a little beyond the antennal scales; the upper margin, mostly quite straight, in some specimens however is a little recurvated upwards at its distal extremity. In all our specimens the distance between the two posterior teeth of the upper margin is a little larger than between the others, the anterior tooth of the upper margin is always more or less remote from the apex, the latter armed on its upper side with one or two very small teeth, very rarely without a tooth. The number of teeth of the upper margin in most specimens amounts to eleven, in some others to twelve, in others again to only ten, but having examined 77 specimens I found only two with *nine* teeth (as described by Stimpson). The under margin is armed with four teeth in 56 out of the 77 specimens, in 12 only with three teeth: Our specimens therefore either present a remarkable variety or Stimpson may perhaps have examined only a few specimens, accidentally armed with nine teeth on the upper and three on the under margin. It may be allowed to quote the formulas of the teeth of these 77 specimens:

$\frac{12+2}{5}$	1	specimen.	$\frac{11+1}{5}$	5	specimens.	$\frac{10+1}{4}$	9	specimens.
$\frac{12+2}{4}$	1	»	$\frac{11+1}{4}$	31	»	$\frac{10+1}{3}$	1	»
$\frac{12+1}{5}$	2	»	$\frac{11+1}{3}$	5	»	$\frac{10+1}{2}$	1	»
$\frac{12+1}{4}$	9	»	$\frac{11+2}{4}$	2	»	$\frac{9+2}{3}$	1	»
$\frac{12+1}{3}$	2	»	$\frac{11+0}{4}$	1	»	$\frac{9+0}{4}$	1	»
$\frac{12+0}{4}$	2	»	$\frac{11+0}{3}$	2	»			
$\frac{12+0}{3}$	1	»						

So that only one individual wholly agrees with the number of the teeth in Stimpson's description; this specimen has a length of 50 mm (rostrum included); the legs of the second pair are 30 mm. long, the wrist extending nearly in its whole length beyond the end of the antennal scales, being 7 mm. long; the palm $6^1/_2$ mm, the fingers $3^1/_2$ mm. long. In other specimens the *chelae* of the second pair only extend beyond the antennal scales. The inner margin of the short terminal filament of the internal antennae is not serrate, and the branchiostegal spine is strong and quite situated at the margin of the carapace. This species seems to be proper to the China sea.

Leander longirostris Say.

Palaemon longirostris, Milne Edwards, Hist. Nat. Crust. T. II, pag. 394.

Two fine specimens were collected near the town of Amoy (China).

Formulas of the teeth of the rostrum in these specimens: $\frac{7+3}{8}$ and $\frac{8+2}{7}$.

Branchiostegal spine rather smaller than antennal spine. Short filament of the internal antennae reaching to the end of the rostrum, not serrate, its fourth basal part only united with the other filament. Legs of the first pair not reaching to the end of the antennal scale, those of the second pair reaching with half the palm beyond that scale; wrist of the second pair rather shorter than the arm and shorter than the hand; palm a trifle shorter than carpus, a little tumid, fingers straight as long as the palm. The other legs elongate and a little extending beyond the antennal scale. Length of our specimens (rostrum included) 60 mm; length of rostrum 18 mm. This species is closely allied to *L. serratus* Pennant, but is distinguished by the under margin of the rostrum not being emarginate at its base.

Leander celebensis n. sp.

The Museum has lately received seventeen specimens of an apparently new species of *Leander*, collected together with

Leander semmelinkii n. sp. and many other species of Caridae on the road of Macassar (Celebes), Januari 1880. This new form is closely allied to and has the size of *Leander distans* Heller, but is distinguished by the number of teeth of the rostrum and by the second pair of legs.

Rostrum lanceolate, reaching to the end of the antennal scales, upper margin straight or a little convex, as also the under margin, which is not emarginate at the base; it is $\frac{14-15}{3-4}$ dentate, the teeth of the upper margin acute directed forwards, extending along the whole margin, distance between the two first twice as large as between the others, the third tooth situated above the eyes, the three or four teeth of the under margin situated in the middle of it, minute and hidden by the hairs of the margin. Carapace smooth, branchiostegal spine small, a little remote from the margin, abdomen as in *Leander semmelinkii.* Peduncles of the internal antennae a little shorter than the antennal scales, short filament of these antennae connected only for a short end with the long filament. External maxillipeds reaching to the second joint of the peduncle of the upper antennae. First pair of legs reaching with the hand beyond the end of the antennal scales, the carpus being nearly twice as long as the hands. Second pair of legs very elongate, stronger than the first pair, reaching with the greater distal half of the wrist beyond the antennal scale; wrist a little shorter than the hand, much longer than the palm, fingers very thin, closely situated to one another, and very slightly longer than the palm. The other ambulatory legs very thin, quite unarmed, with the claws very elongate and nearly straight, those of the last pair extending with half the tarsus beyond the antennal scale.

Length from the tip of rostrum to the end of the abdomen 25 mm.

Length of the legs of the second pair 16 mm., length of the wrist $3^2/_3$ mm., of the whole hand $4^1/_2$ mm., of the fingers $2^1/_2$ mm.

Leander celebensis, is also nearly allied to *Leander natator* M. Edw. (*latirostris* de Haan), but in the latter species the rostrum is elevated in its distal extremity, the teeth in the middle of the upper margin longer than the others, (being nearly similar to one another in *celebensis*), the branchiostegal spine as large as the antennal, the carpus of the legs of the first pair as long as the hand, that of the legs of the second pair also comparatively shorter and the fingers distinctly longer than the palm. In *L. latirostris* the tarsi are spinulose and the claws less elongated than in our new form.

Leander natator M. Edw.

Palaemon natator Milne Edwards, Hist. Nat. Crust. t. II, pag. 393. — Heller, Crustac. des südlichen Europa's, pag. 268. — *Palaemon latirostris*, de Haan, Fauna Japonica, pag. 170, tab. XLV, fig. 12.

The Museum collection contains but a few specimens of this very common pelagic species:

1°. A fine female specimen, collected in the Sargasso-sea by Mr. Ottke.

2°. Another fine specimen, collected by Mr. Kruisinga in the Sargasso-sea, at 23° N. L. and 35° W. L.

3°. A female specimen, found near the island of Waigeoei by Mr. Bernstein.

4°. Several specimens from Japan, preserved in spirits, types of *Palaemon latirostris* de Haan.

A close investigation has shown me that all these specimens wholly agree with one another in all particulars, so that I can state *Pal. latirostris* de Haan to be identical with *Pal. natator* M. Edw. De Haan did not observe the small teeth which are found at the under margin of the rostrum, though hidden by innumerable small hairs: the author of the Fauna Japonica does not appear to have had a specimen of *P. natator* M. Edw. before him, for he says: *Pal. natator* M. Edw." affinis *videtur*.

Leander natator M. Edw. therefore has an extraordinarily wide geographical range, being recorded from the Sargasso-sea (Atlantic Ocean), the Mediterranean, Indian Ocean, Waigeoei (Moluccas) and Japanese seas. It has an equally large distribution as many other pelagic species, as for instance *Nautilograpsus minutus* M. Edw.

According to Mr. S. I. Smith (The Stalk-eyed Crust. Atlant. Coast N. America, pag. 122) *Leander natator* is identical with Say's *Palaemon tenuicornis*: in that case our form should be called *Leander tenuicornis* Kingsley.

Leyden, May 1881.